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ABSTRACT

Every sentence conveys a temporal point of view through its aspectual meaning. This viewpoint arises through presenting a situation from a certain temporal perspective and indirectly classifying the situation as an exemplar of an idealized situation type. The information is conveyed by the aspectual categories of a language. This paper presents a general approach to aspect in which situation type and viewpoint are posited as the two components of aspectual meaning. The components are independent and interact systematically in sentences to give aspectual information. Arguments are presented for the independence of the components, including a discussion of the relation between statives and progressives. Then, the paper considers issues concerning situation types and argues for two levels of classification, basic and derived. The paper concludes with a bounding paradox suggesting that independently bounded events have unique properties that should be recognized in the grammar of a number of languages. It is suggested that contrastive meaning is an important element in understanding the force of apsectual choice, and that this information is part of the pragmatic knowledge that speakers have of their language. (Contains 18 references.) (CK)

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LSA session on aspect
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The relation between aspectual viewpoint and situation type: Aspectual systems in universal grammar and in languages of the world

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ED 384 219

Introduction.

Every sentence conveys a temporal point of view through its aspectual meaning. Temporal point of arises through presenting a situation from a certain temporal perspective, or viewpoint; and indirectly classifying the situation as an exemplar of an idealized situation type. The information is conveyed by the aspectual categories of a language. The domain of aspect includes temporal viewpoints such as perfective and imperfective, and temporal situation types such as event and state. Aspectual value contributes in an essential way to our grasp of the situations presented in sentences, and to the movement of time in discourse.

I will present a general approach to aspect in which situation type and viewpoint areposited as the two components of aspectual meaning.[1] The components are independent, and interact systematically in sentences to give aspectual information. The aspectual meaning of a sentence consists in the viewpoint and situation type of that sentence. The situation type of a sentence enables us to grasp what type of situation is involved; and its viewpoint conveys a temporal perspective which focuses all or part of that situation. The examples illustrate for English the type of aspectual information that is conveyed by a sentence.

1	a	Mary was swimming in the pond.	imperfective
	b	Mary swam in the pond.	perfective
2	a	John walked to school.	Accomplishment (telic)
	b	John walked by the river.	Activity (atelic)

1a and 1b present a situation from different viewpoints; 2a and b present different types of situation - telic (with a goal, or natural endpoint) or atelic. Viewpoints are usually indicated by overt morphemes - here, the difference between the simple verb form and the

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auxiliary *be+ing*. Situation types, on the other hand, are not expressed morphologically but by the constellation of a verb and arguments: verb constellations are associated with idealized temporal events or states. I use the term 'situation' to cover all types. The precise value of an aspectual category can be investigated with syntactic and semantic tests.

The element of choice is an important part of aspectual meaning. Most situations can be presented from more than one temporal point of view, within the constraints of a given language. Aspectual systems reflect this flexibility. There is no privileged semantic relation between particular viewpoints and and situation types, although some choices may be more frequent than others. Further, situation type is also open to more than one choice, a point I'll emphasize later with the notion of derived situation type.

In what follows I'll lay out an approach in which the aspectual system of a language consists of two components, situation type and viewpoint. I'll present some arguments for their independence, including a discussion of the vexed question of the relation between statives and progressives. I then consider some issues concerning situation types, and argue for two levels of classification, basic-level and derived. I'll end with a bounding paradox; the paradox shows that independently bounded events have unique properties which should be recognized in the grammar of a number of languges. Many of these ideas are familiar, and must appear in all theories of aspect; some are not. I will use English illustrations for the first part of the paper, and turn to other languages as I proceed.

Before presenting the theory I note a few well-known, even notorious, points in the domain of aspect, which should be explained in any adequate account.

• The imperfective paradox: Certain sentences seem to ascribe impossible knowledge to speakers and receivers. For instance, the sentences of 3 present a telic event [They build a sandcastle]. (The brackets indicate a verb constellation - verb and its arguments - that may or may not be realized in a sentence.) 3a unproblematically presents the event as a whole; but there is a possibly puzzling aspect of 3b, which presents the event as ongoing.

3 a They built a sandcastle.
b They were building a sandcastle.

The puzzle is that we know the nature of the final endpoint in the progressive sentence, although it is not semantically visible and may never occur. Such knowledge has been called paradoxical (cf Dowty 1977) because it may involve a nonexistent event object. I will argue that there is no paradox in the account given by the two-component theory.

• Situation type and adverbials: There are dependencies between temporal adverbials and sentences of different situation types. Certain combinations are natural whereas others are odd, requiring special interpretation. The examples illustrate with sentences presenting situations that are telic and atelic, and adverbials of duration and completion:

4 a Jane walked to school in ten minutes. (+telic: Accomplishment)
b ?Jane walked to school for ten minutes.

c ? Mary walked in the park in ten minutes. (- telic: Activity)
d Mary walked in the park for ten minutes.

The adverbials contrast in these pairs: the *in*-adverbial is good with the Accomplishment, questionable or odd with the Activity; the situation is reversed with the *for*-adverbial. The odd sentences require a special interpretation. There are similar contrasts with the verbs *finish* and *stop*, in which one involves completion and the other does not. I will give a systematic account which explains and predicts the co-occurrence facts and the interpretations of the odd sentences.

• Situation type shifts: A situation may be categorized in more than one way, as 6 illustrates. Both sentences present a ship moving, with similar verb and arguments.

5 a The ship moved.
b The ship was in motion.

5a presents an Activity, 5b presents a State. The characteristic temporal property of an Activity is dynamism, while States are static and unchanging. Thus the presentations ascribe contrasting key properties to the situation. It's also possible to use the same verb constellation to present different types of events, as in the sentences below:

c John coughed.
d John coughed for 20 minutes.

c presents a single event; d an event which consists of a series of subevents, each one a cough. There are many such shifts, in English and other languages. I will sugggest a generalization about when and why certain combinations of expressions trigger them.

• Relation between situations: The aspectual viewpoint of a clause or sentence often determines our understanding of the relation between different situations. Situations may be taken overlapping, or sequential. *When*-clauses are good diagnostic contexts for the two interpretations. As 6 shows, the imperfective (progressive) presents overlapping situations, while the perfective presents situations in sequence.

6 a When Harry arrived, Mary telephoned the police.
b When Harry arrived, Mary was telephoning the police.

These relations arise in complex sentences and in discourse. One would like to know precisely what aspectual information leads to these consistent interpretations.

I. The two-component theory

I'll now introduce the two-component theory, and the precise aspectual meanings it assigns to sentences. I begin with a few remarks about each component.

Situation type: The situation presented in a sentence is associated through its verb constellation with a situation type. Situation types are concepts of idealized classes of situations which share temporal features: each is a state or event concept with a particular set of temporal properties. The aspectual systems of language include a small, very general, group of situation types. They represent a classification of states and events according to their temporal features, as discussed by Ryle, Kenny, Vendler, Dowty and many others.

Each situation type has a temporal schema with its defining temporal properties. The schemata are associated with verb constellations in the grammar of a language; compositional rules interpret the situation type value of a given verb constellation.

In using a particular verb constellation to talk about a given situation in the world, I take it that the speaker associates that situation with a particular idealized situation type. The situation types are covert categories in grammar in the sense of Whorf (1956). They have distinctive sets of distributional properties, although not marked by an overt morpheme.

Viewpoint: Aspectual viewpoints focus on situations like the lens of a camera. As the camera lens makes a scene available for a picture, so viewpoint focuses and makes semantically visible all or part of the situation - more precisely, all or part of a situation schema. The information made visible by a viewpoint is available for semantic interpretation, and may give rise to pragmatic inferences as well. The aspectual viewpoints of a language are usually signalled morphologically; each morpheme is associated in the lexicon with a schema that gives the properties of the viewpoint.

The main types of viewpoint are traditionally the perfective and imperfective. The traditional difference between perfective and imperfective lies in whether or not they present open or closed situations. Stated in terms of situation schemata, the perfective viewpoints include both the initial and final endpoints of the situation, while imperfectives include neither endpoint. It is in the viewpoint component that languages differ most. Some have several perfectives and/or imperfectives; other languages have very limited aspectual systems. I'll mention some specific viewpoints later. I will argue below that we need to include a third type of viewpoint, a Neutral default.

The aspectual meaning of a sentence results from the interaction of the schemata from each component. 7 and 8 illustrate with an informal analysis of two sentences which differ in viewpoint. The situation type is a durative telic event with intrinsic, or natural, endpoints, known as an Accomplishment. In the situation type schema I and F_{nat} represent endpoints, the dots internal stages. In the viewpoint schemata the dots give the span of the viewpoint. 7 has the progressive viewpoint: the progressive is a type of imperfective, focusing part of a situation. 8 has the simple, perfective viewpoint, which

focuses the situation in its entirety. In the composite schemata the slashes indicate the span of the situation type schema which is focused by the viewpoint.

7 Informal temporal schema for *They were building a sandcastle*

a. [They build a sandcastle]	I . . . . . F_{nat}	(Accomplishment)
b. [be+ing]	. . .	(Progressive schema)
c. They were building a sandcastle	I . . . . . F_{nat} ////	(Composite schema)

8 Informal temporal schema for *They built a sandcastle*

a. [They build a sandcastle]	I . . . . . F_{nat}	(Accomplishment)
b. [Ø]	I. . . . . F	(Perfective schema)
c. They built a sandcastle	I . . . . . F_{nat} ////////////	(Composite schema)

The composite schemata correctly show that the type of situation is transparent through the verb constellation. The receiver knows the situation type of a sentence, independent of whether the viewpoint makes visible all or part of the situation.

Discourse Representation Theory, a dynamic semantic theory, is the locus for formalizing the analysis.[2] The information for a Discourse Representation Structure (DRS) is constructed from the syntactic surface structure of sentences. In the theory each clause introduces an event or state entity, and a temporal interval, into a DRS. These entities are the locus for aspectual information. Situation type information is stated as a set of temporal properties which characterize the event or state entity. Aspectual viewpoint is stated as a property of the temporal interval which is also introduced with each clause. These aspectual meanings are composed by rule, like the other meanings of a sentence. The rules draw on the semantic features and schemata which are associated with the relevant linguistic forms. In the DRS aspectual meaning of a sentence is integrated with temporal location, which is essential to acounting for the effects of aspectual meaning in discourse. I won't talk about the formalization here; for discussion, see Smith 1991, 1993.

Languages differ in the aspectual meanings they express. The basic situation types and viewpoints appear generally, yet they vary from one language to another. The notion of Universal Grammar can provide a framework and categories of aspectual systems and meanings. The two-component theory is general enough to account for the

similarities between languages, and has sufficient precision for particular systems and variations.

Abstracting away from particulars, and from non-temporal factors, we can give a general schema of the temporal structure of situations. This is the basis of the Universal Grammar account of aspect. In principle a situation may have preliminary stages, internal stages, and resultant stages. All of these possibilities are given in 9 below; it is a skeleton schema that does not represent any particular situation type. Capital letters indicate initial and final endpoints; the dots represent stages or periods.

9 General structure of situations

...I....F...

Such an abstract structure indicates the range of possibilities for aspectual meanings of both situation types and viewpoint. Each property indicates a possible source of variation, some of which I discuss below. Thus we can delimit the range of situation types and viewpoints. The approach does not predict other meanings that may be coded in an aspectual system, such as adverbial focus or emphasis on agentivity.

The basic aspectual categories are stated for Universal Grammar in very general temporal schemata with the properties of the category. These properties underdetermine a category, allowing for the variations that occur. For instance, the Universal Grammar schema for the perfective viewpoint will include both endpoints of a situation. Yet as we'll see below, some perfective viewpoints do not fit this definition exactly. They are marked with respect to Universal Grammar and learneable from positive evidence. I will use the terms "perfective" and "imperfective" to refer both to the general categories and to language-particular instances of them. There are various types of perfectives and imperfectives among languages of the world, as Comrie and Dahl have shown. Some languages have more than one viewpoint of each type: Chinese, for instance, has two imperfective viewpoints and three perfective viewpoints. Other languages, such as Finnish and Icelandic, have a minimal expression of aspectual viewpoint.

Aspectual viewpoints focus all or part of a situation schema; the material in focus has a special status, which I will call 'visibility'. Only what is visible is asserted. Visible information about a situation is available to the receiver of a given sentence for truth-conditions and entailments. It gives the semantic aspectual meaning, which is conventional and cannot be changed. Receivers may make additional inferences on the basis of the information of situation type and viewpoint; these are conversational meanings which can be cancelled.

Viewpoints present open or closed situations. Perfective viewpoints are *closed*: in terms of a situation schema, they present a situation with its initial and final endpoint. Imperfectives are *open*, presenting an interval of a situation without either endpoint. Imperfectives are available to additional information and inference in a way that perfectives are not. I suggest a third type, a Neutral viewpoint, below. Neutral viewpoints are open but allow an interpretation of closure that is not available to imperfectives; the Neutral is a default viewpoint that arises under certain conditions.

The span of the perfective is represented informally in 10. This general schema gives the unmarked perfective viewpoint.

10 Perfective viewpoint in Universal Grammar

This schema does not apply to stative situations, because endpoints do not appear in the temporal schema of a state. Nor does the general schema include perfectives with a span greater than that of the situation schema focused: the schema specifies only the endpoints of a situation. Perfective viewpoints that have these additional properties are marked in relation to the canonical perfective.

Imperfectives focus an interval without endpoints. There are three possible foci for such viewpoints, according to the abstract representation of situations: one is internal, another is prior to the initial endpoint, the third follows the final endpoint. They are indicated schematically in 11.

11 Possible imperfective viewpoints

(a) I ..... F (b).....I.....F.....

////// //// //////

We find imperfectives that focus these intervals, though all three are not always available in a given language. I shall say that the imperfective schema of Universal Grammar is that of 11a, which focuses an internal interval of a situation and is therefore closest to the situation schema. Imperfectives of all three types appear, though we don't always find the three in a given language.[3]

Imperfective viewpoints vary in how they interact with situation types; they also may convey different conceptual features. The progressive of English and many other languages; this viewpoint is dynamic and appears neutrally only with non-statives. Others take all situation types; some convey a static feature like the Mandarin Chinese imperfective *-zhe*, to which I return below. It's worth noting that imperfective viewpoints are available neutrally for statives as well as non-statives in many languages. In Russian the imperfective is the only viewpoint available to statives. The French *imparfait*, a past tense that conveys an imperfective viewpoint, is good with all situation types but the Semelfactive, which has no available interval.

The Neutral viewpoint is a default in those aspectual systems which allow sentences without a viewpoint morpheme. I know of three cases in which this situation arises. There are a number of languages with tense systems that are asymmetric for aspect. In French, for instance, the future tense is neither perfective nor imperfective, although past and present have clear aspectual values. The neutral viewpoint also arises when a language has optional viewpoint morphemes, as does Mandarin Chinese. Finally, certain languages have no morphemes which signal viewpoint exclusively, like Finnish and Icelandic.

The empirical argument for the Neutral viewpoint turns on the viewpoint interpretation of sentences that lack a viewpoint morpheme; I will refer to these as LVM sentences. They cannot be analyzed as either perfective or imperfective, because with

appropriate lexical items and/or contexts they allow both open and closed interpretations. The determining factors are situation type, context, and world knowledge. I illustrate with French examples in the future tense. Consider the main clause of 12:

12 Jean chantera quand Marie entrera dans le bureau.
Jean will sing^{Fut} when Marie will enter^{Fut} the office

The main clause has two interpretations, one open and one closed. The closed interpretation is inceptive: Jean will start singing at the time of Marie's entrance. On the open reading Jean will already be singing when Marie enters. According to native speakers of French, the closed interpretation is more natural although both are possible. Note that the possibility of an inceptive clearly distinguishes these examples from imperfectives, which don't allow such interpretations (cf 5b). When we vary the example slightly, as in 13, the open interpretation is more natural:

13 Jean dormira quand Marie entrera dans le bureau.
Jean will sleep^{Fut} when Marie will enter^{Fut} the office

These examples demonstrate that the *Futur* can present open or closed situations. This range of interpretation is not available for either the perfective or the imperfective viewpoints.[4] I now show that not all viewpoint interpretations are available. French imperfectives may focus the preliminary stages of an Achievement; this possibility does not exist for LVM sentences. 14 illustrates with an Achievement in the main clause, and a conjunction test. If a preliminary readings are available, it should be reasonable to conjoin a *Futur* Achievement sentence with an assertion that the event will not occur. But the conjunction is semantically ill-formed (indicated by #).

14 #La cheval gagnera le course mais il ne gagnera pas.
The horse will win^{Fut} the race but he will not win

(With an imperfective viewpoint such a conjunction is reasonable, cf an English version, *At that moment the horse will be winning the race but he won't actually win.*; the corresponding French sentence cannot be constructed.) This finding suggests the interesting prediction that Neutral viewpoints do not have a span beyond the endpoints

of a situation. This prediction must be studied further in other languages that have the relevant structures.

The two-component theory requires that all sentences have a viewpoint, since situation type information is not visible without one. I posit the Neutral viewpoint as a default for LVM sentences. The notion of neutral viewpoint allows the theory to account for languages of varied structures. In Finnish and Icelandic, for instance, there are no grammaticized viewpoints. They have aspectual systems however: situation types function as covert categories in the usual way, and case marking functions in certain sentences to indicate open and closed situations. Many sentences of these languages have only the Neutral viewpoint. The approach allows us to maintain a general analysis, while dealing with real differences among languages.

The temporal schema of the Neutral viewpoint gives partial information, which accounts for the range of interpretations that holds of sentences without an explicit aspectual morpheme. It also provides that every sentence has an aspectual viewpoint. The neutral viewpoint allows both open and closed readings. Its span includes the initial point and at least one internal stage of a situation.

To end this brief discussion of aspectual viewpoints, I'd like to comment on the importance of pragmatic factors in aspectual systems. Viewpoint meaning is contrastive, and as such depends on the set of viewpoints available in a language. In a language with one perfective, for instance, choosing that viewpoint has a certain force, which is different from the choice of a similar viewpoint in a language that offers two perfectives. I suggest that contrastive knowledge is not stated in the grammar of a language, but rather is part of the pragmatic knowledge associated with that language. Knowing a language includes knowing the pragmatic values of its viewpoints, as well as their semantic values. At the pragmatic level, the semantic meaning of a viewpoint interacts with contrastive knowlege of a given language, language-specific conventions, and general principles of

information. I haven't time in this presentation to discuss these matters further; see Smith 1991, 1993 for discussion.

Situation types: The aspectual situation types are semantic categories, concepts of idealized situations classified according to their temporal features. Such concepts have been posited since Aristotle. They are based, I take it, in human perceptual and cognitive abilities, cf evidence from language acquisition. In recent work three temporal features are used to distinguish the main situation types: static-dynamic, telic-atelic, durative-instantaneous. Telic events have intrinsic or natural endpoints, and involve a change of state; in contrast, atelic events have arbitrary endpoints.

15 presents a classification of situations using these features. It is familiar except that the distinction between Semelfactives and Achievements is often noted as a subtype of Achievements. I include it here as a separate type because the two differ in temporal meanings and distributional properties: Semelfactives form a separate category in many languages.

15 Situation types
States : static, durative (know the answer, love Mary)
Activities : dynamic, durative, atelic events (laugh, push a cart, stroll in the park)
Accomplishments : dynamic, durative, telic events consisting of a non-detachable process with an outcome (build a house, walk to school, learn Greek)
Semelfactives: dynamic, atelic, instantaneous events (tap, knock, flap a wing)
Achievements : dynamic, telic, instantaneous events (win the race, reach the top)

Each situation type is associated with a temporal schema which gives its essential temporal features. Among non-statives, the durative schemata have two endpoints, the instantaneous have a single point. Statives do not include endpoints: the changes to and from a state are distinct from the state itself.

Situation types are realized linguistically at the level of the sentence. Information about the situation type of a sentence is conveyed by the verb and its arguments (the verb constellation) as is well-known. Compositional rules can interpret the situation type of a sentence by composing the aspectual values of verbs, NPs, PPs, etc. Aspectual features are associated with individual entries in the lexicon. Adverbials may affect situation

type. I'll discuss this below. Compositional rules are a mechanism which represent fairly complex semantic operations, along lines explored by Manfred Krifka 1987.

Zeno Vendler was perhaps the first to recognize the status of situation types as covert categories. In his classic 1967 article Vendler discussed semantic and syntactic properties which distinguish each of the situation types. Semantically, the situation types have characteristic patterns of entailment. Syntactically each situation type has a set of distributional properties, such as co-occurrence with certain adverbials, verbs of completion or termination, etc. Many of these properties are the correlates of the semantic temporal properties. Recent work in how aspect functions in narrative discourse has brought out an additional type of temporal property, namely, whether a situation in a given presentation advances narrative time. In narrative discourse, closed events advance narrative time, while open situations and states do not.[5]

The set of situation types given above play a role in the grammar of many, but not all languages. In those few I've been able to study closely, I've found evidence for all five them as covert categories in English, French, Chinese, and Russian, but not in Navajo. Navajo does not grammaticize the distinction between telic and atelic events. There are also particular situation types which appear in a given language, such as the Tentative in Mandarin Chinese. These are marked situation types. The semantic properties which distinguish the situation types hold quite generally, of course. The distributional properties of the situation types vary somewhat by language. Not all languages have verbs and adverbials which convey the notion of completion, such as English *in an hour*, or *finish* vs *stop*, verbs which encode this distinction. Again, the distinction between active and stative encoded by the pseudo-cleft form in English is peculiar to this language.

All this is familiar, and too simple. Actually, the relation between situation types and verb constellations is not one-to-one. Verb constellations may be associated with more than one situation type, depending on the context in which they appear, as illustrated

in the examples of 6 above. We want to give a principled account. I will argue that we need to recognize two levels of categorization, a basic-level and a derived level of situation type. There are various sources, or triggers, for situation type shifts, which can be accounted for nicely in the compositional rules of the two-component theory.

2. Independence of the components

Viewpoint is independent of situation type in the two-component theory. I will give several arguments for this position.

2.1 The first point concerns the span of certain aspectual viewpoints. There are a number of viewpoints where the span of focus does not coincide with all or part of a situation. To account for such viewpoints without incoherence the viewpoint of the sentence must be independent of the situation schema.

One type of viewpoint whose span does not coincide with the situation focusses the preliminary stages of an event, as in the progressive Achievement sentences of 16.

16 a Algernon is reaching the top
b We are solving the problem

In these sentences, the viewpoint focuses stages before the single stage of an Achievement. The span of the viewpoint does not include the event itself.[6] The possibility holds for imperfective viewpoints and Achievements in a number of other languages, although some - Mandarin Chinese, for instance - do not allow them.

Similarly, the viewpoints of resultative sentences have a span that does not coincide with the schema of the situation type. Resultatives have an imperfective viewpoint that focuses the resultant state of an event. Such sentences are common in Mandarin Chinese, for instance. 17 gives a Mandarin example with the stative imperfective viewpoint, indicated by -*zhe* on the verb.

17 Zhangsan zai chuang shang tang-zhe
Zhangsan at bed on lie-ZHE
Zhangsan is lying on the bed

Resultatives are focused by the Japanese imperfective *te iru* and in many other languages. Strong evidence for the independence of viewpoint comes from another viewpoint in Chinese, perfective *-guo*, known as the experiential.

The experiential construction involves both aspect and temporal location. In terms of locatioin it presents a situation prior to the present, or other time. The aspectual viewpoint is perfective; the situation type is stative. The experiential is like a perfect in some ways, see the discussion in Smith 1994. Here I discuss only the span of the perfective viewpoint in the experiential construction. The experiential *-guo* asserts a discontinuity between the final endpoint of the prior situation and the current state of affairs. To show what this involves, compare a *-guo* sentence with another perfective, verb-final *-le*:; the two contrast, as indicated below :

18 a. Tamen shang ge yue qu-le Xiang Gang.
they last CL month go-LE Hong Kong
Last month they went to Hong Kong (they may still be there)

b. Tamen shang ge yue qu-guo Xiang Gang.
they last CL month go-GUO Hong Kong
Last month they went to Hong Kong (& they are no longer there)

18a, with the verb-final perfective *-le*, simply asserts that the event of going occurred; 18b, the experiential, also that the result state of the event, if transitory, no longer obtains. The sentences are appropriate in different situations. 18a is felicitous whether or not the subjects are still in Hong Kong; but 18b can be said only if they are no longer there. These examples present telic situations with transitory resultant states. Such events involve an affected subject or object, rather than an experiencer subject . In other cases the notion of discontinuity is vacuous, as Meng Yeh has pointed out:[7] namely atelic situations and telic situations with non-transitory final states, such as eating a meal or reading a book.

The *-guo* viewpoint presents a closed situation with a change of state subsequent to the final endpoint. In terms of a situation schema, the span must include the prior situation and a post-final stage which is not part of the situation itself. This type of span cannot coherently be stated as dependent on the situation schema. But because

viewpoint is independent of situation type the two-component theory can account nicely for the discontinuity of the Chinese experiential. All of these examples show that viewpoints with spans which don't coincide with the schema are not uncommon.

The next point that I want to make about the independence of the aspectual components is that the viewpoint of a sentences does not obscure its situation type. In other words, the situation type of a sentence is available to the receiver whatever its viewpoint. Consider a sentence with the progressive viewpoint.

19 Jane was walking to school.

Receivers of this sentence know that only part of the event is visible, and what sort of event it is. One knows the nature of a final endpoint, although it is not presented and may not occur. This is represented in the informal composite schemata given above, where both kinds of information are available.

This kind of schema correctly represents the facts about viewpoint and situation type, I believe. Crucially, a person does not need access to the outcome to know that the verb constellation in 19 is associated with an idealized event of a certain type, an Accomplishment. Such knowledge has been called paradoxical, and the understanding of progressives said to involve an "imperfective paradox," notably Dowty 1977. But there is nothing paradoxical in the knowledge that one has about sentences like 19. Situation type and viewpoint belong to distinct components of the aspectual system, and they are signalled by different linguistic forms. Viewpoint is conveyed by a single morpheme, while the constellation of a verb and its arguments conveys situation type. The linguistic forms do not contrast syntactically. Note that the same sort of knowledge is assumed without qualms for the interpretation of progressive atelic sentences such as 1a above, *Mary was swimming in the pond.* Knowing that an Activity does <u>not</u> have a natural final endpoint relies on information about the type of situation that is going on just as in the Accomplishment sentences..

The information about situation type is intensional information about an ongoing situation. It may be difficult to implement this kind of intensional knowledge in a truth-conditional account. The problem, I take it, is to recognize that a fraction of an event belongs to a larger event of a certain type. In fact we make such conclusions all the time on the basis of partial knowledge. If I see Jane walking along a certain street early in the morning, I may think that she is walking to school. If I see that she is carrying her briefcase, my hypothesis will be strengthened. Of course I may be wrong. The point is that people often categorize events without full, conclusive evidence of their nature. My ability to correctly assess the situation of Jane walking down the street will depend on my knowledge of events and of Jane's habits, and it is quite independent of my inability to predict the future. I cannot know that Jane will run into Mary, who is playing hookey, and decide not to go to school after all; or, in another scenario, that she will be run over by a truck. These problems belong to a different discussion, and arise for any intensional account of ongoing situations.

2.2 Progressives and statives

I will now discuss the relation between progressives and statives. I will argue that progressives are different from statives, although they have certain properties in common. This point strengthens the argument for independence of the components.

There is an interesting similarity between stative sentences, which have the perfective viewpoint, and sentences with the progressive viewpoint. They share certain properties and have similar effects in discourse. Intuitively both stative and progressive sentences present stable situations without endpoints, although progressives have successive stages and statives do not. Formally, both progressive sentences and stative sentences hold consistently throughout an interval, a feature known as the subinterval property. Situations with the sub-interval property hold for all sub-intervals of an interval.[8] They have the same pattern of entailment. Distributionally, progressives and statives complement each other, since the progressive is available neutrally only to non-

statives. Their complementarity, and the fact that both types of sentence have the sub-interval property, may suggest that progressives are statives. In fact the progressive has been analyzed as a stative operator by Taylor 1977, Vlach 1981, and others. But there are several arguments against identifying progressives with statives. I'll discuss them in turn.

Progressives have the distributional properties of non-statives, and the conceptual property of dynamism associated with non-statives. Moreover, statives may be taken as presenting open or closed situations, whereas progressives are never closed. Sentences with *when*-clauses show this difference. Compare the interpretations of 20a and b.

20 a Mary was angry when John broke the glass.
b Mary was singing when John broke the glass.

20a is ambiguous: either Mary was already angry, or she became angry, while 20b has only the ongoing interpretation.

Although the progressive is not neutrally available for statives, progressive stative sentences are often used by speakers, particularly in informal discourse. 21 illustrates:

21 a. John was really liking the play.
b. That cake is looking done.
c. Amy is resembling her great-uncle today.

Sentences of this kinds are discussed in some detail in Smith 1984.

In these examples stative verb constellations appear with the linguistic forms appropriate for events, endowing them with the dynamism and other connotations of events. These are instances of non-standard or marked aspectual choice. They violate the grammatical constraint which limits the progressive to the category of non-statives. Marked choice of the progressive is a live and much-used option in the language; its force is to present a state as an event. If progressives are identified with statives, we cannot explain the distinction between standard and marked progressives. To account for the extended, marked uses of a viewpoint we allow it to impose a conceptual temporal property on the situation interval that it focusses. The progressive imposes the stage property on stative situations in its marked uses.

If we look at other languages we find that there is no inherent complementarity between other viewpoints imperfective and the stative. The imperfective viewpoints of French and Russian apply to stative sentences, for instance. Chinese has two imperfective viewpoints: one is progressive and the other static. The two imperfectives differ precisely in the property of stativity, but we cannot account for this difference if progressives are statives. The system of Chinese shows that different temporal properties are available for them. The Chinese *zai* viewpoint is progressive and not stative, in contrast to the *-zhe* viewpoint, which has stative properties; formally both are imperfectives with the sub-interval property. Examples of the two are given in 22.

22 a Tamen zai da qiu
they ZAI play ball
They are playing ball

b Qiang shang gua-zhe ji zhang huar
wall on hang-ZHE several CL picture
Several pictures are hanging on the wall

If progressives are identified with statives the two imperfectives of Chinese cannot be distinguished. Note that it's not unusual for a language to have two imperfectives, a progressive and another imperfective viewpoint.

Empirically, then, there is strong evidence against identifying progressives with statives. Progressives are a type of imperfective viewpoint; they are very like statives because they have properties in common; but they are not statives. They belong to different type of linguistic and cognitive category.

The information conveyed by statives and progressive is similar in some ways, as we have seen; but it arises differently. They play similar roles in discourse because they both present situations without endpoints. Sentences with the progressive have a viewpoint span which is open because it does not include the endpoints of an event; stative sentences present situations which do not have endpoints in their temporal schema. Thus neither type of sentence tends to move narrative time.

2.3 The last argument I want to give for the independence of viewpoint and situation type comes from the phenomenon of situation type shifts. I'll discuss this at some length below; for now I'll say simply that there are a number of factors that trigger a shift in situation type. One of them is viewpoint, but there are others. Situation type shifts can be analyzed in a simple, uniform manner, in which viewpoints are not accorded privileged status. This constitutes an indirect argument for the approach of the two-component theory.

3. Shifted situation types[9]

People can talk about situations from more than one point of view, and this flexibility is an essential part of the aspectual component of language. Speakers may focus on the beginning, middle, or end of a situation; they may present one situation as a sub-part of another; or, as belonging to a pattern of situations (habituals), or, as a member of a class of situations (generics). Speakers may also categorize a situation in an unusual manner to bring out or emphasize a certain aspect (e.g., progressive statives). Usually such marked presentations involve a difference in situation type from the standard case. For instance, a sentence which presents the coming about of a state is Achievement in situation type; while a sentence presenting the state itself is Stative. Notice, in the following examples, that all situation types participate appear in these different guises; and that the shifts are supported - or triggered - by material in the context.

Focus on beginnings: The coming about of a state, or the beginning of a durative event, can be conveyed with the verb constellation that is associated with the state or event as a whole; or stated explicitly with verbs such as *start, begin*. I will consider only the former type here. Sentences that focus on beginnings are known as inchoatives (change into a state) and ingressives (beginning of an event), as in 23-24.

23 a	Teresa understood the problem.	(Stative)
b	At that moment Tersea understood the problem.	(Inchoative)

24 a Mary walked down the beach. (Activity)
b (Then) Mary walked down the beach. (Ingressive)

As indicated by the adverb *then*, sentences like 23b are natural in contexts which present a sequence of events. These sentences take a narrowed focus, presenting the beginning of a situation rather than the situation in its entirety. The beginnings of situations can be seen as events in themselves, with distinctive temporal properties (Freed 1979). There are other types of narrowed focus: a sentence may also present the end of a situation - with verbs such as *stop*, *end*; or an ongoing situation (*continue*, *in the midst of*); an explicit morpheme is required for these cases.

Multiple-event activity: There are presentations of events which have an internal structure consisting of sub-events belonging to a different situation type. For instance, 4a is a Semelfactive; in 4b the same verb constellation presents an Activity with internal stages:

25 a Lynn knocked at the door. (Semelfactive)
b Lynn knocked at the door for five minutes. (multiple-event Activity)

There is only one interpretation of 25b: the situation consistS of a series of knocks, which continued for a five-minute period. The verb constellations is associated with the situation type of the sub-events.

Situations of every kind can be presented as part of a pattern of recurrent situations of a given frequency, as in habitual sentences. Habitual sentences are semantically stative. They present a pattern of situations, but no particular situation.

26 a Teresa always played a game of tennis on Friday.
b The dance company rehearses frequently.
c Mark is often in love.

As is typical of statives, habitual sentences do not advance narrative time.

Finally, there are the cases of marked categorization. The speaker chooses to emphasize a particular aspect of the situation, presenting a state as dynamic, an event as static; an Achievement as an Accomplishment; etc.

27 a Sam resembles his uncle. (Stative)

b Sam is resembling his uncle more and more these days. (Activity)

28 a The bird flew. (Activity)
b The bird was in flight. (Stative)

29 a The old man died. (Achievement)
b The old man finally finished dying. (Accomplishment)

The first type was mentioned above in connection with the difference between stative and progressive. The sentences above show that a verb constellation can be associated with more than one situation type. They are not exotic examples, but rather appear commonly in language.

3.1 Accounting for shifts in situation type

In the light of these examples, it seems that there must be some mechanism for shifts in situation type. The examples also call into question the direct association of verb-constellations and situation types.

Among the several mechanisms that might be used are multiple categorization and compositional rules that apply to more than one type of verb constellation.[10] These approaches would suggest that no one of categories is basic for a given constellation. But this does not seem to be correct. It is natural to categorize a situation of a bird flying as dynamic, although we may on occasion choose to present it as static; and it is natural to categorize a resembling situation as static, although we can present it as dynamic. These are the classifications which emerge early in language acquisition, and which represent the basic manner in which humans cognize such situations. Indeed, the intuition that certain categorizations are privileged is reflected in the very notion of a marked categorization.

I suggest that we posit two levels of categorization to account for the range of situation types that occur. There is a simple, basic level of categorization for each minimal verb constellation; this level is simple and always available. The basic level reflects the natural way that people cognize and categorize situations in the world; and the way they associate verb constellations with idealizations. There is also a derived level of categorization, which requires adverbial or other information from context. I'll use the

term "complex verb constellation" to distinguish sentences with adverbials from simple verb constellations. Both simple and derived levels can be recognized by compositional rules.

The notion of basic-level and shifted situation types is borrowed from psychology. Psychologists recognize a basic level of categorization, which is standard and unmarked. Although people can and do categorize things in more than one way, all categories don't have the same cognitive status. I'll mention some well-known examples from the domain of names, or labels. Most creatures objects have a name that is generally preferred, although there are names for objects which vary in focus and level of detail. For instance, *dog* is basic for most people in a way that *terrier* and *animal* are not. Roger Brown, to whom the notion of basic-level categorization is due, points out that the basic-level name often has a functional basis (1958: 217-21). Moreover, Rosch et al 1976 present experimental evidence for the primacy of basic-level categorizations.

The two-level analysis of situation type can be implemented through the mechanism of compositional rules. Rules will compose basic-level and shifted situation types. The rules themselves give strong formal support for the two levels of categorization, because they differ for each level. Basic-level categorization holds for a simple verb constellation, without additional information of any kind. In contrast, shifts are triggered by adverbials or other information. In the examples above, for instance, the presence of adverbials lead to a shift in situation type. Formally, then, basic-level constellations constitute the simplest cases; the shifted categorizations are triggered by contextual factors and are thus more complex. The output of the basic-level compositional rules provide the input to the derived-level rules.

The trigger of a shift in situation type is a clash of feature values. For instance, a sentence may have an adverbial with an aspectual feature which clashes with the simple verb constellation. In 29, for instance, the verb constellation has the aspectual feature [Instantaneous], while the adverb has the aspectual feature [Durative].

29 Mary coughed for an hour

In interpretation, the value of the adverbial feature overrides the simple verb constellation: the sentence has the derived situation type value of an Activity.

This exemplifies a principle which holds generally for derived situation types. In a clash between verb constellation and adverbial, the adverbial overrides. This principle can be stated as an alpha rule, as sketched in 30. The input to the rule is a verb constellation (VCon) which already has a situation type value, produced by basic-level compositional rules. The situation type is represented by a cluster of temporal features (abf); the rule applies to a complex verb constellation if a given feature appears with one value in the simple verb constellation and with another value in an adverbial.

30 $_{VCon}[a,b,f\alpha] + _{Adv}[f\beta] \rightarrow _{S}[a,b,f\beta]]$

The output of the rule is the derived situation type value of the full sentence (S). The principle applies to other forms with relevant features. For instance, in 31a and b there is an incompatibility between the instantaneous situation type [Mary cough] and other features of the sentences: the progressive viewpoint is associated with the feature +durative in 31a and the adverbial is associated with +durative in 31b. This information triggers a shift, so that one takes the sentences as presenting derived, durative events:

31 a Mary was coughing. (Multiple-event Activity)
b Mary was knocking at the door. "

The principle of clashing features enables us to understand other examples in which verb constellations appear with incompatible adverbials. 4b-c, repeated here, are of this type. Although sometimes considered ungrammatical, these sentences actually have clear interpretations which follow directly from the principle that the value of an adverbial overrides that of simple verb constellation.

4 b ?Jane walked to school for ten minutes.
c ?Mary walked in ten minutes.

In both cases the adverbial indicates the interpretation of the sentences: we take 4b as an Activity, an atelic event in which arriving at school is not relevant; 4c must be a telic event in which the singing had a tacit goal, or endpoint. Although such sentences are sometimes claimed to be ungrammatical, they are clearly interpretable as involving a shift in situation type.

Summarizing, we have seen that situation type shifts may be triggered by adverbials and and other information. The feature value of an adverbial, or other form, triggers a situation type shift just in case there is a clash of aspectual features. The simplicity and consistency of the account constitutes strong evidence for the two-component theory, in which viewpoint is independent of situation type. It is sometimes claimed that viewpoints are operators which shift situation type: the progressive, in this view, shifts a non-stative to a stative. But the full range of derived situation types includes cases triggered by adverbials, which would demand a different treatment. All cases can be handled by the analysis in which situation type is independent of viewpoint, however.

3.2 Further adventures in derived situation types

I now present some additional sentences with complex verb constellations, in which there is no clash in the value of a temporal feature. I'll be interested in Activity sentences with *for*-adverbials, an adverb that is compatible with the verb constellation. The adverbial gives an independent bound to the situation, with a rather surprising effect: the resulting sentences pattern distributionally with telic situations. We will be forced to reconsider the temporal feature of telicity to allow for the closely-related feature of an independent bound.

The sentences in 32 illustrate. There is no clash between feature values; indeed, such sentences are standardly used to illustrate the Activity situation type.

32 a We walked.
b We walked for 3 hours.
c They pushed the cart.
d They pushed the cart for 3 hours.

All of these sentences present closed situations. They differ in the type of closure, or bound. The simple sentences present situations with arbitrary, unspecified final endpoints. The sentences with adverbials present situations with independent, specified bounds. Given the compatibility between verb constellations and adverbials, we don't expect a shifted interpretation; but paradoxically, we'll find that there is onw.

Now let us consider the situation type of 32b and d. Surprisingly, the presence of the adverbial changes the distributional properties of a sentence: the complex verb constellations pattern with telic sentences . So in 33 the sentences appear as complements of *finish*, a verb of completion and thus a correlate of telicity; in 34 they appear with *take*, also a correlate of telicity, and a locational bound.

33 a. We finished walking for 3 hours.
b. They finished pushing the cart for 3 hours.

34 a. It took me 10 miles to walk for 3 hours.
b. It took them 10 miles to push the cart for 3 hours.

These syntactic contexts are diagnostic for telic rather than telic sentences. Telic events are finished, atelic events cannot be. The examples with *take* are patterned after sentences like *It took me an hour to walk 3 miles*. They are marginal, but strongly suggest telicity. Another test goes in the same direction: like Accomplishment sentences, these are ambiguous with *almost*:

35a I almost walked for 3 hours
...but I stopped after only 2 1/2 hours.
...but I decided not to because I had too much work to do.

b They almost pushed the cart for 3 hours
...but stopped after only 2 1/2 hours.
...but decided not to because they had too much other work to do.

Paradoxically, when we apply the test which shows that a sentence is an Activity, we shift its situation type. Distributionally the bounded atelic sentences pattern with telic sentences.

We now ask whether they have the semantics of telic sentences. Consider the patterns of entailment for atelic and telic events. Atelic events are homogenous, so that there is no difference in kind between a proper part and the entire event. According to Vendler 1967, with homogenous events "any part of the process is of the same nature as the whole." This relation between part and whole is reflected in the characteristic pattern of entailment which holds for perfective and imperfective Activity sentences. If one is true, then other is true: *Sue was walking in the park* entails *Sue walked in the park* But telic events, which involve a change of state, do not have this entailment: if an imperfective sentence is true, we can't conclude that the corresponding perfective is true. Thus *Sue was bulding a sandcastle* does not entail *Sue built a sandcastle*. We ask, then, about the pattern of entailment for sentences with temporal bounds: whether 36 a entails b, and whether 36 c entails d. Note that there are two readings for these sentences. I'm interested here in the intensional reading: the adverbial indicates the intended length of the event.[11]

36 a I was walking for 3 hours.
b I walked for 3 hours.

c They were pushing the cart for 3 hours.
d They pushed the cart for 3 hours.

The answer to our question is that a does not entail b, nor c entail d. Semantically these sentences pattern with telic cases. Evidently, the temporally bound of an atelic events is like the intrinsic final endpoint of a telic event: both are specific final endpoints. Note that an important difference remains: atelic events are homogenous, whereas telic events are heterogenous. Temporally bounded events do not involve a result, or change of state as telic events do.

What we have found is that temporally bounded events pattern like telic events with the grammatical correlates of telicity. The distinction corresponds to the general difference between intrinsic and independent bounds to situations, discussed in Heinämäki 1984. The notion of an intrinsic bound is similar to that of a natural endpoint. Building a

house, reading a book, walking to school, are events that have intrinsic bounds. The bounds are part of the nature of the events. As Bull points out (1960), when the endpoint of such an event is reached, it's not possible to continue doing it. In contrast, events with independent bounds receive their bounds externally. Similar fact can be adduced for spatial bounds, as in *I walked for 3 miles*; I cannot discuss them here.

Independent bounds also appear in stative sentences, as the examples illustrate:

37 a I was a blonde for 2 months.
b Mary was sick for 2 months
c Sam was angry for 2 minutes

All these sentences present closed situations, with the temporal bound the final endpoint. The states themselves may continue, perhaps, but the period after the asserted bound is taken as another period.

38 a We talked for 2 hours; and went on talking.
b I was a blonde for 2 months and liked it so much that I never went back to being a brunette.

These sentences do not share the distributional properties of telic sentences. They don't appear with the forms of dynamic syntax (*What I did was be sick for 2 months), and they are odd with verbs of completion. Semantically they pattern with other sentences presenting situations with independent bounds. They are ambiguous with *almost*, like telic sentences: *I was almost a blonde for 2 months* has two readings, like the non-statives with independent bounds we saw earlier. So independent bounds have slightly different effects in stative and non-stative sentences.

Marginally it seems that these can move narrative time. Neutrally states don't move narrative time, though they can do so inmarked cases. At least, having the independent bound makes it easier, more natural to get the interpretation of moving time. But we don't want to say that these sentences are dynamic in derived situation type, indicating a change out of the state. Cos the state could continue, as noted above.

In the examples we have discussed, the temporal bound is independent and given by an optional adverbial. However, there are a few cases in English of verbs which take

temporal arguments - 39a, and perhaps b and c (though since the adverbials may be optional in these cases they are less direct arguments of the verb).

40 a The concert lasted 3 hours.
b We stayed for a month.
c She waited an hour.

Taken together, all of these examples suggest that we need to recognize that the temporal property of boundedness plays a role in the grammar of English - and, as we'll see directly, of other languages as well.

The notion of independent bound plays a role in other aspectual systems. In Finnish, it is the grammaticized type of closure for durative events. The Finnish language marks the difference between open and closed situations with case: partitive case indicates an open situation, accusative case a closed situation. All closed durative events have an independent rather than an intrinsic bound, according to Heinämäki 1983. (The nature of closure arises only for durative situations.) She asserts that an accusative object is a bounding expression; it indicates that a termination point - not necessarily the intrinsic final endpoint - has been reached. The examples, taken from her article, illustrate:

41 a Maija luki kirjaa.
Maija read book-part
Maija was reading/read a book

b Maija luki kirjan.
Maija read book-acc
Maija read (all) the book

The situation in 40a is open; the object has partitive case.[12] 40b presents a closed telic situation, with the direct object in the accusative case. The normal interpretation of 40a is that Maija finished the book, having reached the natural final endpoint. Heinämäki argues that the interpretation of completion here is due to pragmatic inference, and that the semantic requirement of the Finnish accusative is merely the existence of an independent bound. This is unlike the perfective in English and French, where the nature of the closure

varies with situation type, and the perfective of an Accomplishment indicates that the intrinsic final endpoint has been reached.[13]

Sentences may appear with a phrase that explicitly specifies an independent bound, such as an adverbial of duration, or of destination; Heinämäki calls these limiting phrases. With such phrases, the direct object or the limiting phrase has accusative case.

41 a Maija luki tunnin.
Maija read hour-acc
Maija read for an hour

b Maija luki kirjaa tunnin.
Maija read book-part hour-acc
Maija read the book for an hour

c Maija luki kirjan puoliväliin.
Maija read book-acc half-way-to
Maija read the book halfway through

The Finnish notion of independent bound includes direction, distance, weight, and price. The accusative occurs on all such phrases; 42 illustrates for two of them.

42a Kirsi ui kilometrin
K. swims km-acc
Kirsi swam a kilometer

b Kaali painoi kilon
Cabbage weighed kg-acc
The cabbage head weighed one kilogram

We see with these examples that the notion of independent bound plays a central role in the coding of closed situations in Finnish.

Mandarin Chinese is similar in coding the closure of a durative situation as an independent bound. The Chinese perfective viewpoints *-le* and *-guo* present closed situations. Semantically these viewpoints convey an independent bound for all durative situation, as in Finnish. Also like Finnish, closed Accomplishments are standardly taken to indicate completion on pragmatic grounds (in Chinese, closure is conveyed by the perfective viewpoint). It's possible to be more specific about the nature of the bound in Chinese: certain morphemes, known as Resultative Verb Complements, may be used to convey completion unequivocally (cf Smith 1990).

The notion of independent bound also plays a role in Russian.[14] The perfective viewpoint requires specific boundedness for all situation types with which it appears. Telic events take perfective prefixes, which indicate that the intrinsic bound is reached. However, durative events with arbitrary endpoints - that is, Activities - require different perfective forms which indicate a specific, independent bound. There are five such perfective prefixes: *pro*, *po*, *pere*, *vy*, *ot*. The examples illustrate for *pro-*, which indicates limited duration, and *po-*, which indicates a shorter duration than expected.

53a Ona pro-stoja-l-a na uglu celyj čas.
She pro-stand-PAST-Agr on corner-prep entire-acc hour-acc
She stood[Perf] on the corner for an entire hour

b On po-rabota-l (časok).
He po-work-past (hour-acc-dim)
He worked[Perf] a bit (for an hour)

Activities in the perfective must have one of these prefixes.[15] Thus the Russian perfective is always associated with a specific bound, either independent or intrinsic. And within the constraints of the language, there distributional similarites between telic and bounded events: the bound functions like a telos. Moreover, bounds of distance are case-marked like temporal bounds in Russian as in Finnish, with accusative case. But measure phrases do not have accusative case in Russian (unlike Finnish).

In light of the foregoing, we must recognize the notion of independent bound as a temporal feature in the situation types and aspectual viewpoints of different languages. How exactly this feature should be treated is not clear; perhaps we need more information about boundedness in disparate languages.

4. Conclusion

At the beginning of this discussion I mentioned several issues in aspectual theory; I'd like to remind you how they are handled in the two-component approach. Since viewpoint and situation type are independent, the imperfective paradox does not arise; information about type of situation is conveyed by the verb constellation of a sentence.

The dependencies between situation types and adverbials are due to the temporal features of simple verb constellations and temporal adverbials; and the requirement that temporal features be compatible in value. Situation type shifts, and clashing feature combinations are interpreted by the rules for derived situation types, which provide that the value of an adverbial overrides the basic verb constellation. Finally, relations of sequence or overlap arise between the situations presented in complex clauses and in discourse. These relations depend on whether the endpoints of the situation schema are focused by the viewpoint in a given sentence.

I have introduced the two-component approach to aspect, given some arguments in its favor, and pursued the analysis of derived situation types. There are several new proposals. The analysis of situation types requires both a basic and derived level of analysis, I suggest; and the temporal features of aspectual systems should include independent bounds to situations. I argue that viewpoint is independent of situation type. I propose that the basic inventory of viewpoints includes the Neutral viewpoint, a default in many languages; this extends the theory to languages without grammaticized viewpoints. I have suggested that contrastive meaning is an important element in understanding the force of an aspectual choice, and that this information is part of the pragmatic knowledge that speakers have of their language. Additional work on all of these matters is needed; I find particularly interesting the topics of neutral viewpoint and pragmatic knowledge of aspectual systems.

Footnotes

1. The two-component theory is set out in Smith, 1991, and other work. Some of the material presented below is new; much of it is taken from the book.

2. Discourse Representation Theory provides a construction algorithm which goes from the linguistic forms of a sentence to semantic representation. The theory is due to Hans Kamp 1981, Irene Heim 1982; it is prsented in Kamp & Reyle 1993.

3. Frequently an imperfective focuses either preliminary or resultative intervals, as well as internal intervals. The Japanese *te iru* focuses resultative and internal intervals; the progressive focuses preliminary and internal intervals; etc.

4. The same range of interpretation appears in Navajo LVM sentences. I illustrate with two temporally related sentences in the Usitative and Iterative modes. These modes contrast with explicit viewpoint morphemes in Navajo.

a **dibé nanishka'go hodootaɬ**
when I herd sheep, he sing Usit...Usit
b **hastiin ná'ádlı̨̈hgo, ch'ínáshdááh**
When my husband drinks, I leave Iter...Usit

According to native speakers the most plausible interpretation of (a) is that the events are simultaneous, whereas (b) presents overlapping events.

5. Closed events are taken as successive, in the basic narrative case. They meet the minimal semantic requirement for successiveness between situations, that an endpoint of one situation follow an endpoint of the other (Heinämaki 1973).

6. The argument depends on showing that this claim about preliminaries is true: that they aren't taken as part of the event itself. As evidence, note that the temporal properties of Achievements are different from Accomplishments. Achievements do not appear with verbs like *finish*, *complete*; they are not ambiguous with *almost*; there is no entailment from simple to progressive forms. All of these are possible with Accomplishments.

7. See Meng Yeh 1993 for a full analysis of the Mandarin Chinese experiential construction, in the DRT framework.

8. Just as *John has loved Mary from* t_i *to* t_j entails *John loved Mary at* t_k, so *John has been running from* t_i *to* t_j entails *John was running at tk*, where t_k refers to any of the infinity of points or intervals between t_i and t_j. The fact that imperfectives have the subinterval property may be expressed formally with the notion of a larger interval. Dowty gives such an account of the truth conditions for progressive sentences, reproduced here(Dowty 1986:44).

> The progressive of a sentence S is true at interval I iff there is an interval I' properly containing I such that S is true at I

Dowty shows that it follows from this definition that any sentence with progressive tense has the subinterval property.

9. Some of this material appears, in a slightly different form, in the Proceedings of the Cortona Workshop on Tense and Aspect, in press.

10. This second category essentially includes operator approaches such as those of Brecht, 1984 and Moens 1987.

11. There are two readings of *for*-phrases for most people: they may indicate an intended temporal interval, or an actual interval. The point is clearer in a sentence with 2 adverbials,

Martha went to Paris for 3 days for 3 weeks.

This sentence may be paraphrased, Martha went to Paris with the intention of staying for 3 days, but actually stayed for 3 weeks. The adverbial *for 3 days* is part of 'inner' verb constellation. But this doesn't change the essential point here, which is the homogeneity of situations with temporal bounds.

12. Finnish has a class of 'irresultative' verbs, whose objects are always in the partitive. Their translation verbs in English are Activities, e.g. *praise, be afraid of, look forward to*. I'd like to thank Orvokki Heinamäki for this and other information about Finnish.

13. In English the perfective viewpoint presents a situation with the endpoint properties of its situation schema. For instance, a and b present situations with arbitrary and intrinsic endpoints respectively.

a Lily swam in the pond. (Activity)
b Mrs Ramsey wrote a letter. (Accomplishment)

These interpretations are due to semantic meaning rather than pragmatic factors. Thus the following conjunction is odd:

c Mrs Ramsey wrote a letter but she didn't finish it.

French is similar in this regard.

14. Gilbert Rappaport kindly provided this information about the notion of independent bounded in Russian.

15. The analysis of these forms has been debatable. Flier 1984 notes that the delimitation indicated by the prefixes does not involve a net change or result, so that these sentences are not telic. If we recognize that the independent bound as a feature in its own right, these examples are no longer problematic.

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